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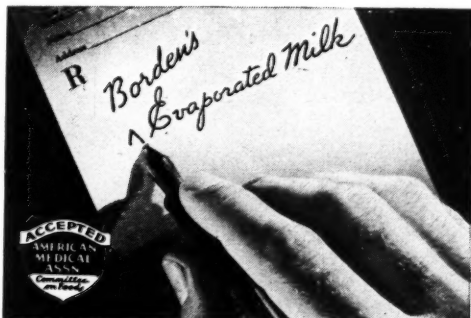
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TREATMENT OF PERFORATIVE APPENDICITIS*

W. E. BURNETT, M. D.
Philadelphia, Pa.

In few conditions is the time factor so important as in appendicitis. An hour may make the difference between clean, safe removal without drainage on the one hand, and a palliative and dangerous operation for drainage alone on the other. At one o'clock the prognosis may be 1% mortality, and at two o'clock 50%. The importance of early operation is paramount, but in the experience of all of us there are a sufficient number of late or obscure cases first seen after the appendix has ruptured to warrant detailed attention, for it is in this group that most of the deaths occur.

On the surgical service at Temple University Hospital in the past two years, one out of each 12 cases has been perforated. Of these, 63% were localized, and 37% generalized. The generalized group showed 50% mortality, but of the localized ones only 10% died. (Table I). The mortality for the two types as recently compiled in several communities is between 50 and 60%, while ours has been 25%. This improvement we feel has been due to certain details which we will consider.

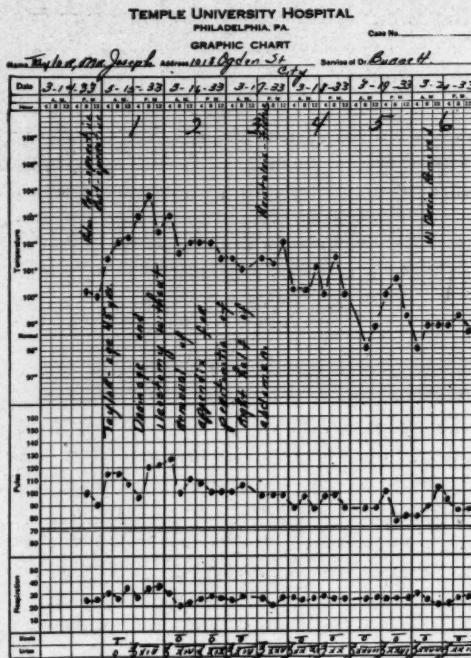
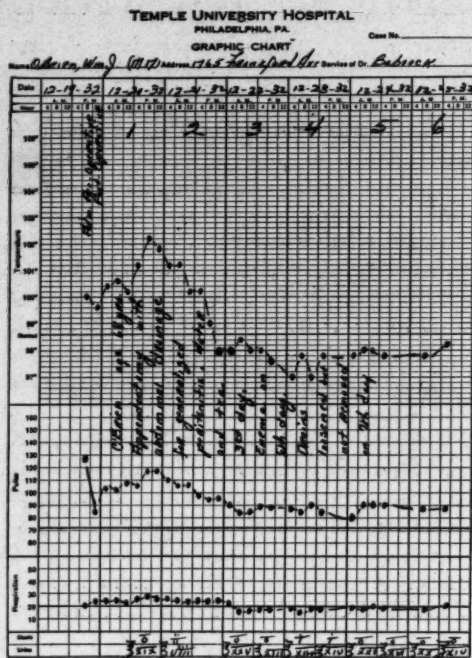
As the suppurative process develops to involve all layers of the appendiceal wall, the reaction of the serosa attracts the mobile omentum and, to a less extent, the other adjacent viscera, which rapidly stick and surround the offender. If laxatives, food and enemata are not taken peristalsis disappears and the loops of intestine and omentum lie quietly around the inflamed appendix long enough to adhere and efficiently wall off this area. Then when the perforation occurs it is into the prepared pocket which prevents spreading. On the contrary, when the stimu-

lation of laxatives or food cause active peristalsis the attempts at adherence are often unsuccessful—the constant and excessive movements will not allow loops of bowel to remain long enough—and when rupture takes place the pus may migrate in any direction and is distributed by the same “stirring” process to all parts of the vulnerable and unprepared serosa. Under such circumstances even mildly virulent bacteria can cause great harm. Operative interference is harmful in direct proportion to the amount of trauma, which further breaks down local resistance. Even at this deplorable stage, however, if the virulence of the organism is not too great and the patient's resistance fairly good, the proper treatment will arrest the process. Treatment is based upon arrest of peristalsis and maintaining or increasing the patient's resistance.

If the diagnosis of generalized peritonitis could be accurately made we believe that such cases should be treated on the principles just mentioned and should not be operated upon immediately. However, this diagnosis is often erroneously made or erroneously missed, as we all know, and for this reason most of our cases are operated on at once. In a few cases which exhibited all the signs of generalized peritonitis plus shifting dullness we have refrained from immediate operation, with gratifying results.

Ordinarily, however, emergency operation is done. Spinal anesthesia is used in the great majority of cases, including young children, because its superb relaxation greatly reduces the intensity and length of operative trauma. When the patient is a poor spinal risk, regional block with or without reinforcement by ethylene is substituted. Rarely, ether is chosen. The incision is a transverse skin

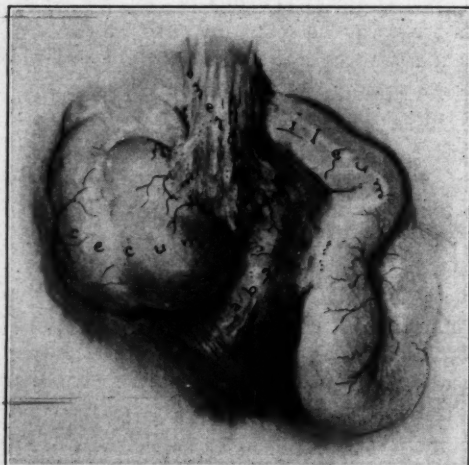
*Read before the Medical Society of Delaware, Wilmington, Delaware, September 26, 1933.



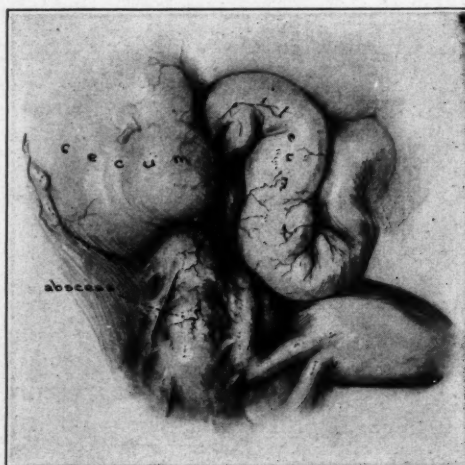
and muscle-splitting type, placed as directly as possible over the appendix. Trauma and handling are minimal, and most of the work is done under vision by "low-trauma" instruments. Suction almost entirely replaces sponging. Cultures are made, and if the appendix is easily gotten at it is removed. If not, it is allowed to remain, and in either case

drainage is instituted with long wicked cigaret drains into the usual recesses. Often no sutures are placed since two or three cigaret drains fill the wound sufficiently. Recently, in a few cases, bacteriophage solutions have been introduced into the peritoneum at this point.

Directly after operation, and at times be-



Medial location—not infrequent. Artist's interpretation. For the sake of clarity only the early stages are shown.



Early pelvic abscess of appendiceal origin. Contrary to the illustration above, the appendix lies posterior to the broad ligament and tube.

fore, the principles of arrest of peristalsis and maintaining resistance are applied. Morphine is given hypodermically in moderate dosage for the first 24 hours. Nothing is given by mouth or *bowel*, continuous hyperdermoclysis of 2 or 3% glucose in normal saline is given into the thighs up to 2 3000 cc. in 24 hours, and additional glucose partially covered by insulin is administered intravenously to furnish energy and to protect the liver cells in their strenuous detoxifying activity.

The intravenous solution is given slowly, usually three times a day, occasionally by continuous drip. The patient is kept flat for 2 hours after spinal anesthesia, and is then placed in extreme Fowler's position. Rectal tubes are introduced at 4-hour intervals, but no suppositories, enemata, or hypodermic stimulants to peristalsis are permitted. If vomiting, hiccough, or gastric distension occur the vacuum suction apparatus of Wagensteen is attached to a Levine tube through the nose into the stomach for constant drainage. Under such circumstances water may be drunk by the patient because it is removed by the tube almost drop for drop, leaving none to cause peristalsis and it serves the dual purpose of satisfying the patient's desire for liquids and of washing out the stomach. This is a most helpful and satisfactory apparatus, but should not be used constantly any longer than is actually necessary. Too prolonged usage may further upset the body chemistry.

Small blood transfusions in 150 to 200 cc. amounts, repeated every 12, 24 or 48 hours as indicated, have been extremely beneficial. and on a few occasions have reversed the downward trend.

The Schilling count has been helpful in estimating progress, and recently colon bacteriophage intravenously has been used on a few cases—too few to determine its value.

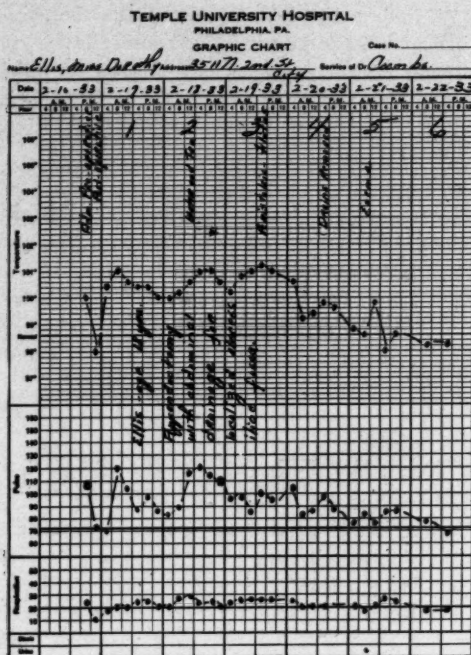
Whether or not the appendix has been removed, if localized intraperitoneal abscesses form they are simply drained under spinal or regional anesthesia through a muscle-splitting incision.

The length of time this plan is followed is not fixed. We have continued it as long as 12 days on occasion with some loss of weight and strength, but not so much as one might expect. It is determined entirely by prog-

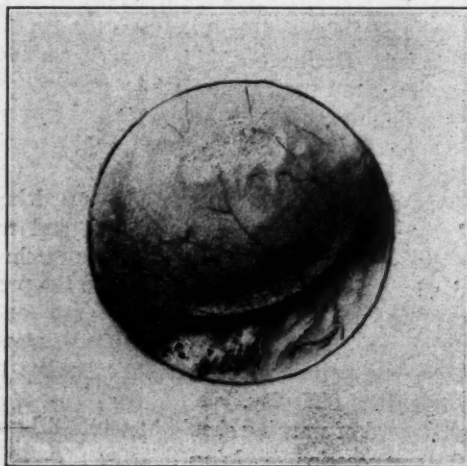
ress, and is not modified until the temperature and pulse are stabilized and closely approach normal, the patient is free of pain, distention, vomiting, etc., and peristalsis is again spontaneously active and efficient. Then and only then sips of water or unsweetened tea are allowed, and if well tolerated, a 4 to 8-ounce milk and molasses enema is administered. This will produce results if the patient is properly stabilized, and the diet is then gradually increased to include sweetened liquids, later soft foods, etc. At this time also the drains are loosened and one to two inches are withdrawn each day until removed. The trauma of too early removal may reactivate the subsiding process.

When, in the progress of time, the patient has not been so intent on self-destruction as to take laxatives, or when nature's beneficent efforts to expell such attempts as laxatives or food have been thoroughly successful, he usually falls into that larger group of localized abscess when his appendix ruptures. This increases his chance of surviving by 40%. The location of these accumulations is most often in the right iliac fossa with the anterior parietal peritoneum usually forming the roof. This is the simplest type to attack, since we can feel the mass, place the incision directly over it, enter and drain without contaminating any clean peritoneum and with practically no manipulation. These patients have rapidly recovered. At times the mass lies entirely on the posterior wall and does not involve the anterior. Drainage of this necessitates traversing clean peritoneum but by gently surrounding the area with wet gauze and emptying the cavity by suction much of the possible contamination has been avoided. In a few such cases the abscess was inspected but not opened, the peritoneum closed and reflected medially until the abscess was reached where it was punctured directly into the pus, causing an extra-peritoneal drainage and again avoiding contamination of clean serosa. The extra-peritoneal contamination seems to cause little difficulty.

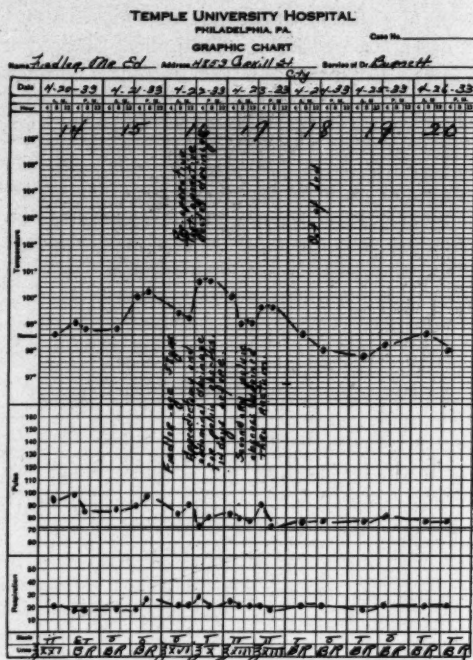
A word of warning should be sounded here. On one occasion, in doing this for retrocecal abscess, the peritoneum was left open to determine the distance posteriorly the dissection should go. Then it was intended to close the



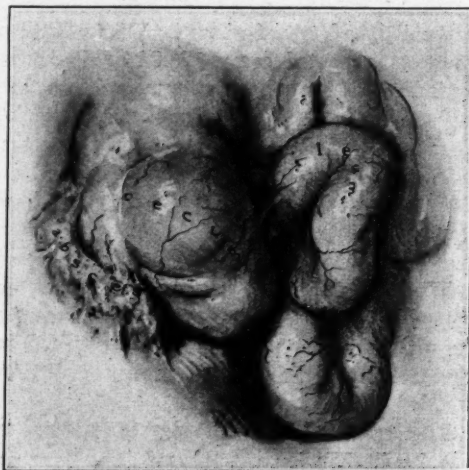
peritoneum anteriorly and open directly into the cavity posteriorly. Before this point was reached, however, the manipulation of stripping the peritoneum by blunt dissection ruptured the thin inflammatory barrier and released the pus intraperitoneally. If we had already closed the serosa we would not have noted this escape and might have gotten a



View through rectal speculum in the presence of a large pelvic abscess. Note the smooth, shiny anterior wall impinging on and almost blocking the rectal lumen. This protrusion is indurated at its margins, fluctuant at its center, and generally slightly to moderately tender.



generalized peritonitis. The usual drainage was instituted and the child recovered, but had to be re-operated three months later because of recurring appendiceal fistula. At the second operation the appendix, perforated near its base and regenerating, was removed and the wound healed by primary union. Such secondary operations for fistula are ex-



A common location of appendiceal abscess. A slightly more posterior position constitutes the Retrocecal type.

tremely rare even though, not infrequently, the appendix is not removed.

The next most common location is in the pelvis. This is because it is a frequent position of the head of the cecum, and secondly because acute appendicitis in this location often causes such vague signs as to lead to under-estimation of the severity of the attack and steps are not taken until rupture has occurred. Even abscess here causes surprisingly little discomfort when compared with the extensive pathology. Therefore, we believe rectal examination should be made in each case, and frequently we are rewarded by finding the tenderness and induration here which are absent on abdominal palpation. Here again the anterior parietes usually are not a part of the abscess, and clean peritoneum must be traversed for drainage. To avoid this recontamination we have, on two male patients, opened the abscess through the anterior rectal wall, and although these very ill patients were considerably improved, we had to open the abdomen from 8 to 18 days later under improved circumstances for removal of the appendix. With secondary pelvic abscesses forming during convalescence from appendectomy this procedure has been extremely valuable, and the patients have rapidly recovered without further ado. In fact, on one occasion the abscess ruptured spontaneously into the rectum as the patient was being put in the lithotomy position for rectal drainage and it was necessary only to enlarge the opening to evacuate a large quantity of foul pus.

Such a secondary pelvic collection can be suspected when there is continuation or recurrence of fever in a patient recovering from abdominal drainage, with a frequent desire to defecate, associated with the passage of much mucus and little feces. Rectal examination will clinch the diagnosis upon finding a bulging anterior rectal wall, which when palpated is firm at the margins, somewhat cystic at its center, and slightly tender. If there is not this definite localization the results of drainage are not so eminently satisfactory. But when the case is properly selected, drainage can be instituted directly into the abscess without contamination of any clean peritoneum, the procedure is short and without

shock, only short gas anesthesia is required, and the opening is dependent, with gravity drainage. The risk of opening into a loop of bowel is slight and the worst result of such an accident would be intestino-rectal fistula, which would cause no disability. Contamination of the abscess by going through the rectum is nil, since the same bacteria exist in both places. Hemorrhage is trivial and the wound rapidly heals, so rapidly at times that it is necessary to insert the finger every 2 or 3 days if prolonged drainage is required. It has the additional advantage that it produces no further weakness of the abdominal wall and therefore does not prolong convalescence. Two of our patients were allowed out of bed within three days after this procedure. (Bailey and Pauchet, et.)

It has been recommended by Hertzler and others to approach pelvic abscess by stripping the recto-pubic peritoneum away until the pathology is reached thus draining it extraperitoneally. This is a long reach, the peritoneum can easily be torn into, important vessels may be injured and at best it is a long, uphill channel.

The third most common location is retrocecal or lateral to the cecum. Here again signs are sometimes indefinite and tenderness may be most marked laterally, since the anterior parietes are often not inflamed. Here extraperitoneal drainage has been used on a few occasions to advantage, thus avoiding any spread of the infection. If such spread can be avoided recovery is gratifyingly rapid. Therefore, in these localized abscesses, if the appendix can be removed without breaking down more barriers than are necessary for drainage alone, then only is appendectomy done. If additional barriers must be broken down, the appendix is not disturbed and drainage is instituted. Few of these patients are known by us to have had further attacks of appendicitis or for other reason required secondary operation. Those of which we have heard have been extremely rare. Even if secondary operation becomes necessary it is under much safer conditions. With the localized abscesses the same pre- and post-operative care, anesthesia, and incisions are used as described for generalized peritonitis.

It appears that we have improved results

in the care of perforation of the appendix than are generally reported.

This we believe due to:

- (1) The use of spinal and local anesthesia.
- (2) Minimal operative trauma—in a few instances postponing operation—with direct drainage routes, and avoidance of spread of infection or disturbance of local resistance where possible.
- (3) Modified Ochsner treatment with partial maintenance of nutrition pre- and postoperative for a sufficient time to give nature every assistance.

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Hertzier: *Peritoneum*, Vol. II, 407; 1919.
Boland, J. A. M. A.: 96; 443; (Aug. 6) 1932.

TABLE I

	Per Cent	Mortality
Incidence of Perforation:		
Acute Appendicitis . . .	8.7	25%
Generalized Peritonitis . .	37	50%
Localized Peritonitis . . .	63	10%
		including pulmonary embolism, myocardosis, etc.

Multiple Sclerosis: Cervicodorsal Sympathectomy as a Relief Measure

FREDERICK S. WETHERELL, Syracuse, N. Y. (*Journal A. M. A.*, May 26, 1934), presents a case in which there was a remarkable alleviation of symptoms following cervicodorsal sympathectomy. His oldest case shows improvement over a period of eighteen months. The possibility that a sudden remission took place in the five cases following the procedure outlined is extremely remote. Decreased vascularization has been shown to result in myelin degeneration of the type found in multiple sclerosis and can be explained on the basis of an asphyxia or anoxemia of the tissue in the neighborhood of the involved vessels. Royle has shown by animal experimentation on brains of living goats that there is an improvement in cerebral circulation following sympathetic trunk section. His observations relative to relief of venous congestion are interesting when considered in the light of Pfeifer's studies, which show that the "perivascular free space" obtains part of its nourishment from the vein contained within it, and of Putnam's, that blocking of this venous supply produces acute lesions having a gross and microscopic resemblance to the lesion found in multiple sclerosis in man.

THE CLINICAL SIGNIFICANCE OF ACHLORHYDRIA*

T. GRIER MILLER, M. D.

Philadelphia, Pa.

It is my intention to say something to you informally, about achlorhydria and some of the diseases in which it occurs. I prefer to think of achlorhydria as a breakdown in a defense mechanism of the body.

It may be interesting, in the first place, to say a word about some of the other defense mechanisms of the body, in order to make clearer what I will have to say about an absence of hydrochloric acid in the stomach contents. During 1932 Professor Walter Cannon brought out his most entertaining book on "The Wisdom of the Body." In it he talks in a philosophic way about the mechanisms of the body by which "steady states" are maintained. He also refers to the maintenance of normal equilibrium as "homeostasis." He points out the constancy of the temperature of the body, the fixed reaction of the blood, the fact that normally the sugar, calcium, protein, and fat content are each kept more or less at a certain level.

When one discusses how these stable conditions are brought about, he gets into all of physiology. If we get cold we move about to generate heat, or, if our surroundings are too hot we perspire and lose heat. In all events, we manage to keep a more or less normal temperature. If we drink water to excess, we lose it accordingly in the urine and perspiration: thus nature makes us keep more or less constant in the water contents of our bodies. Likewise, in the sugar content of our bodies. We get hungry, we eat; or if we cannot eat, the liver glycogen is called on, and so the sugar content is kept more or less at a normal level.

Also, the body has a defensive mechanism against irritants; if in the nose, we sneeze; in the throat, we cough; in the stomach, we vomit. Then again, as a defense mechanism, we have paired organs so that if we lose one we have another: kidneys, eyes, lungs, genitalia. Yet the brain, a most important organ,

*Read before the New Castle County Medical Society, Wilmington, January 16th, 1934.

is single. It is, however, enclosed in a bony sheath and is specially protected. The heart, also single, has peculiar protection due to its suspension between the lungs in a bony cage.

In reference to the gastro-intestinal tract, we must primarily consider the body's nutrition, which is its most important function. Most of the gastro-intestinal tract is not essential to life, but the small intestine is. We can get along without a stomach and without a colon, but not without a small bowel: so, this part is placed midway in the tract, protected on the one side by the mouth and the stomach, and on the other side by the colon and the rectum. Thus is the small bowel protected anatomically.

The digestive tract is also carefully guarded from the physiologic viewpoint. From this angle the first line of defense involves the special senses: we see and smell and touch things that we know would be irritating, and we avoid swallowing them. We may think of the functions of the mouth as the second line of defense against injury to the digestive tract: in it we have the organs of taste, which lead us to reject certain substances; we have teeth with which to comminute solid particles; saliva with which to equalize the temperature of things, to dilute chemical irritants, and to begin starch digestion.

The stomach constitutes the third line of defense. Sometimes things get into the stomach in such a state that, if not altered there, they would cause irritation lower down; but the functions of the stomach which involve the secretions of hydrochloric acid, pepsin and mucus, and the motor function of that organ, act in a defensive way. Let us consider these functions of the stomach, and what happens when they break down.

A breakdown of the stomach in regard to the secretion of hydrochloric acid constitutes achlorhydria. This, strictly speaking, is a condition in which the stomach is absolutely incapable of secreting hydrochloric acid, even after histamine. If in any way the stomach can be made to secrete acid, by histamine or some special food substance, then the achlor-

hydria is false. Histamine serves to differentiate true from false achlorhydria.

We have lost interest in the amount of acid people secrete. I do not believe it is justifiable to spend hours routinely doing fractional test meals. It is tremendously important, however, to know whether or not a stomach *can* secrete acid; the exact concentration of the acid is of less importance. Give a patient some gruel, in a half hour slip down a tube, and secure some of the contents. Add Topfer's reagent, and if the material assumes a red color, then that patient is secreting acid. One may leave the tube in place and get a second specimen 15 minutes later, but if neither the 30 nor the 45-minute specimen shows acid, then inject histamine immediately and wait 15 or 20 minutes longer. If in that specimen, after histamine, acid is present, one has determined that the patient is capable of secreting acid. That is false achlorhydria. On the other hand, if even with histamine there is no acid secretion, then it is a true achlorhydria. Not one time in twenty is it necessary to give histamine.

What are the causes of achlorhydria? In the first place, it is necessary to recognize a group of persons who constitutionally have no acid gastric secretion. Just as one person is predisposed to gall bladder disease, another to duodenal ulcer, another to nephritis, so nature provides us with stomachs that are of different types constitutionally. Some children at birth do not secrete acid. Probably 2 per cent of young children are achlorhydric. As age advances, the instances of achlorhydria increase until finally about 25 per cent of those of 60 to 70 years have an absence of hydrochloric acid. This steady increase may be due, as Hurst claims, to the development of gastritis. Perhaps improperly chewed foods, excesses of food, irritating foods, or the drinking of too much alcohol, are responsible; perhaps repeated acute general infections, as Faber has claimed, or focal infections, such especially as oral sepsis, are responsible. There are then two groups: the congenital and the acquired.

Among the diseases associated with achlor-

hydria one thinks first of chronic gastritis. There was a time when it was one of the most commonly diagnosed diseases. Extensive degenerative changes in the stomach were described. Then, when it was pointed out that post-mortem autolysis explained such findings, all pathologists lost interest and felt it was not worth while to make sections of the gastric mucosa. More recently, however, as a result chiefly of the study of specimens secured at operation when the stomach is resected, it has become apparent that chronic inflammatory changes throughout the mucosa of the stomach are not rare. It is, indeed, found that chronic gastritis is a not a uncommon disease.

Chronic gastritis is recognized clinically with considerable difficulty. An absence of free acid in the gastric contents, when associated with much mucus in all the specimens, and especially when found in an alcoholic, or one with long standing oral sepsis and bad eating habits, should arouse strong suspicion. Yet many people who habitually abuse their stomachs, do not show evidence of chronic gastritis. That, according to Hurst, occurs in the 80 per cent of people who have normal secretions in their stomachs, but in at least 10 per cent of people there is a tendency to low or absent acidity, and in those gastritis is liable to result from such indiscretions. Similarly, in the 10 per cent that has a tendency to hyperacidity, ulcer may develop from abuse of the stomach. We have a constitutional condition with which to deal, and this perhaps is the determining factor.

Secondly, I wish to point out that persons who have no hydrochloric acid in the stomach, no matter what the cause, are predisposed to develop gastric carcinoma. A current thought is that about two-thirds of all patients who have carcinoma of the stomach have developed it on the basis of a chronic gastritis. There is another group whose carcinoma develops secondary to ulcer: the other one-third. In the latter group the symptoms are usually those of a long-standing indigestion, dating back for years, often five to thirty years, bad in the spring and fall, better in the summer and winter, the attacks usually characterized by burning epigastric discomfort, relieved by food and soda, with belching and sour taste in the mouth. In the contents of the stomach

of such cases, even after malignancy has occurred, you will find hydrochloric acid.

The other group, developing on a gastritis basis, gives a different history. In that group the patient, well until a few months before, suddenly gets nauseated, vomits; you examine him and find a big carcinoma of the stomach. Examine his gastric contents and he has no hydrochloric acid. There has not as yet been reported a case that had hydrochloric acid in the beginning of the carcinoma and had no hydrochloric at the end. If they have it at the beginning, they have it at the end. Some have a higher gastric acidity toward the end than they had when the physician first saw the patient.

Not long ago, about five years, a surgeon came into my office and said, "I suddenly became very ill yesterday, will you look me over?" I found a big mass in his epigastrium. He had no hydrochloric acid in his stomach contents. X-ray study confirmed a diagnosis of carcinoma of the stomach. Yet that man had a subtotal gastrectomy, and he is well and active today. At first hand you would say a very advanced case, yet he has done beautifully; as do many of the cases with a short history and achlorhydria, the cases that I believe are on a gastritis basis.

On the other hand, many smaller malignant lesions, developing on an ulcer basis and with acid, have early recurrences after operation. Last year, for instance, a woman came to our clinic with a lesion in the pyloric end of her stomach. It was at first thought to be an ulcer. The gastric acid content was normal. X-ray study suggested an ulcer, but because of its location and a persistence of symptoms she was re-x-rayed a month later. Still the nature of the lesion was in doubt, but because the niche had not decreased, operation was performed. A small malignant lesion was found and resection was performed; within another few months she had an intestinal obstruction, due to metastasis, and died. This represents the outcome in many of the cases on an ulcer basis. This better prognosis in the achlorhydric cases suggests that the gastritis is primary and not secondary to the carcinomatous lesion. It favors the thought, therefore, that gastritis predisposes to cancer.

So one group of patients apparently gets

carcinoma on a gastritis, or at least on an achlorhydria basis. Incidentally, a surgeon may feel more hopeful of a good result from radical surgery in these than in those on an ulcer basis.

One other point in favor of achlorhydria as a predisposing factor in cancer. We are more and more frequently discovering carcinoma of the stomach in patients with primary anemia. This is more common now that, due to the use of liver, they do not die of their anemia. They seem to be suitable subjects for developing malignant disease of the stomach. Certain studies of the stomachs of such anemic subjects show evidence of diffuse gastritis. This then is another argument in favor of the theory that gastritis precedes gastric carcinoma. Dr. Castle has demonstrated beyond all doubt that there is normally an X-factor in the stomach secretion which prevents the development of primary anemia, that it is absent usually in association with an absence of hydrochloric acid. The fact that cancer of the stomach develops under such circumstances naturally suggests that the gastritis, frequently associated with the achlorhydria and probably responsible for it and for the absence of the X-factor, also underlies the development of the malignant lesion.

May I now refer to a few patients with carcinoma of the stomach and with primary anemia whose histories strongly suggest a preceding and primary gastritis. About 1920 a patient came under my observation who had been an alcoholic all his life: he came in because of colon trouble. A gastric analysis showed no free hydrochloric. Four or five years later he presented the typical picture of primary anemia. With transfusions and later by means of liver extract, his blood was restored to normal and he continued in good shape, until finally about a year ago a carcinoma of the stomach was recognized. His stomach at autopsy showed, in addition, typical diffuse gastritis. It at least seems probable that he had the gastritis first, this developing on an alcoholic basis and accounting for his achlorhydria 13 years ago, and that secondary to that lesion he later developed primary anemia and finally the cancer of the stomach.

In another patient, a minister, a gastric analysis 25 years ago showed no hydrochloric acid, and cancer was suspected. He later developed primary anemia which was diagnosed first at the Geisinger Hospital of Danville, Pa., and later at the University Hospital. On a still later admission, about a year ago, carcinoma of the stomach was recognized, and that led to his death. The etiology for a gastritis in this case is not clear, but he had had an achlorhydria for many years, which might have resulted from a gastritis, or might in itself have led to a gastritis. In any event, it is easily conceivable that both of his later and more serious diseases were complications of such a lesion.

A third patient, seen about 4 years ago in our wards, presented the picture of cardiac decompensation, but was also anemic, had no free acid in his stomach, and x-ray evidence of polyps. Dr. E. L. Eliason, at operation, removed the polyps, one of which proved to be malignant, and the patient then made a good recovery. We believed his anemia at that time was due to hemorrhage from the stomach polyps, but later a diagnosis of primary anemia was made, and he has done well since then on liver therapy. Dr. Conner, of the Mayo Clinic, within the last six months, has reported some twenty cases in which both carcinoma of the stomach and primary anemia had been present. There are more and more cases of this sort being reported, quite a few in the foreign literature.

I should also briefly refer to another type of anemia in this connection. We are all familiar with the chronic idiopathic hypochromic anemia of middle-aged women. Those patients show an achlorhydria, and get well on iron medication. The iron in green vegetables is not sufficient, apparently because something is lacking in the stomach secretion, which makes it impossible for them to utilize the iron in food substances. Mettier and his associates have showed, however, that predigested iron-containing foods relieve this anemia, this suggesting that the absence of acid or some other factor in normal gastric secretion is responsible for the condition. There are other anemias, such as that of pregnancy, in which achlorhydria occurs. Some of these resemble primary anemia and are cur-

able by liver therapy; others apparently, as Strauss and Castle have showed, are due to a dietary deficiency conditioned by gastric anacidity.

I have seen patients with achlorhydria develop sudden intestinal attacks characterized by high fever, abdominal cramps, and diarrhea. These attacks, I have believed, were due to irritant food material, perhaps infected, getting through the defective stomach and setting up acute intestinal inflammation. I observed a number of such attacks in a patient of 75 years, who had been without gastric acid for at least 20 years: otherwise he was in good health.

Many pellagrins have achlorhydria, 75 per cent according to some observers. Such a high incidence in any disease must be of significance, though it is not as yet understood. Many cases of arthritis lack hydrochloric acid. Some think that gall bladder trouble is more common in achlorhydric individuals. I doubt if this is altogether true, since many gall bladder cases have plenty of acid in the stomach contents. Dr. Hurst thinks that patients who are achlorhydric are more susceptible, however, as a result of the organisms of the lower bowel, under such circumstances, reaching the duodenum and eventually the biliary system.

In conclusion, I have tried to present in this very informal way the idea that it is possible to look upon achlorhydria as a breakdown in a defense mechanism of the body. If we think of the presence of hydrochloric acid as one of the things nature has given us to ward off danger, you get the point of view. In some individuals achlorhydria is present from birth; in others it develops as a result of insults to the stomach; whereas in still others, in spite of stomach abuse, it does not develop. Achlorhydria, whether congenital or acquired, predisposes to gastritis, to carcinoma of the stomach, and to primary anemia; perhaps, in addition, it is an important factor in the development of chronic idiopathic hypochromic and other anemias, of pellagra, of arthritis, and of certain gall bladder infections.

When a patient is known to lack hydrochloric acid in his stomach contents, he should be watched carefully for these more serious diseases; he should be instructed as to proper

mouth hygiene, the avoidance of irritating foods, and the careful chewing of his food; he should, on the slightest evidence of digestive trouble, have a routine physical examination, together with blood studies and an x-ray investigation of the stomach.

PYELITIS AND URETERAL STRICTURE*

RICHARD W. TE LINDE, M. D.

Baltimore, Md.

Some months ago Dr. Mayerberg asked me to address this Society upon the subject which he has announced. I am glad to do so, for I feel that it is a subject which requires some emphasis. The idea of ureteral stricture was first conceived by Hunner some twenty years ago. In spite of the fact that he has talked about it much, it has been rather slow in permeating the profession. Everyone realizes the importance of drainage in surgical infections, but in urology its importance is not as generally appreciated. Even many urologists in good standing apparently fail to realize its importance, if one is to judge by their method of handling certain of these cases.

As to the incidence of urinary tract infections, one can gain some idea from the records of some of the larger hospitals. At the Johns Hopkins Hospital, one out of 76 admissions is due to kidney infection; at the St. Louis Children's Hospital, one out of 40 admissions. Out of 2100 cases of kidney infection in various hospitals 1191 were in adults and 909 in children. Kidney infection is about twice as frequent in females as in males. One great factor in females is pregnancy, but if we subtract the cases occurring during pregnancy and the puerperium we still find the disease about a third more frequent in women. I believe that the shorter urethra is a factor in the greater incidence in the female. This is particularly the case during infancy, when the genitalia are frequently bathed in feces. It is interesting to consider the incidence of urinary tract infection in the various decades. It occurs frequently in the first decade of life, but takes a sharp drop in incidence in the second decade. Then comes the third and fourth decades, in which preg-

*Read before the New Castle County Medical Society, Wilmington, May 16, 1933.

nancies are frequent in women and venereal infection in men. Accordingly there is an increase in incidence. The decade from 40 to 50 may be considered the calm before the storm. Childbearing is for the most part over, venereal infection is less frequent, and prostates have not yet begun to enlarge. From 50 years on there is an increase in incidence in both sexes, associated with prostatic enlargement in the male and cystocele and prolapse in the female.

Considering these infections from the point of view of the invading organism, we find the colon bacillus responsible in 80 to 90% of the cases. The remainder are due to the staphylococcus aureus and albus, streptococcus, and rarely *B. typhosus* and others. However, when we name the organisms recoverable in the urine we have told only half the story of the relation of pyelitis to infecting organisms. In doing urological work one cannot but be impressed by the relation of urinary tract infections to infections elsewhere in the body. A history of acute tonsillitis or quinsy is very common preceeding pyelitis, especially in children. How frequently one obtains the history of burning and frequency of urination coming on during acute respiratory infections. Then, too, in the more stubborn chronic urological infections one sometimes fails to see improvement until tonsils are removed, sinuses drained, or a tooth removed. These clinical experiences cannot help but impress one with the association between urological infections and those in distant parts of the body, notwithstanding the fact that the organism recoverable from the urine is not the one responsible for the tonsillitis, sinusitis or the apical dental abscess. One may conjecture as to the *modus operandi* by which a colon bacillus infection of the kidney complicates a streptococcal infection of the throat, but one cannot be blind to the clinical association of the two.

Our knowledge of the actual route by which infection takes place is also very incomplete. The prevailing theories may be enumerated as follows:

1. Hematogenous, i. e., an infection from the blood stream to the kidney and thence descending to the bladder.

2. An ascending route from the bladder

urine to the kidney pelvis either via the lumen of the ureter or via the lymphatics.

3. Direct lymphatic extension from the bowel to the kidney. The question is still a moot one. The most generally accepted theory is the hematogenous one. Crabtree has been one of the champions of this theory and cites one case which he feels is conclusive. A patient with acute retention was found to have sterile urine. A retention catheter was inserted. On the 7th day the patient began to have fever and the blood culture was positive. The urine was sterile. Later the patient developed a chill and pain in the kidney region. The urine culture was then positive and the blood negative.

Although hematogenous infection undoubtedly takes place there is also much evidence to show that infection of the kidney pelvis may also be an ascending infection. This history of bladder symptoms several days before the development of the symptoms of acute pyelitis is suggestive of this path of infection but the following case of my own observation is almost conclusive. A vaginal fixation of the uterus was done upon a patient with an uninfected urine, and repeated catheterizations were necessary over the first week. At the end of that time she developed burning and frequency of urination, and the urine contained much pus. It had obviously been infected by repeated catheterizations. She was afebrile, and allowed to get up on the 14th post-operative day. On the 19th post-operative day she was taken with a chill, high fever, pain in the right flank, and ran a typical course of acute pyelitis. This then, obviously, is a case of ascending infection, whether via the lumen or via the lymphatics no one can say. Those opposed to the theory of ascending infection cite the fact that in doing cystograms there is practically never a reflux into the kidney pelvis through a normal bladder, and maintain that the oblique course taken by the ureter through the muscular bladder wall produces sufficient valve-like action to prevent back flow. But aside from the neurogenic group, where reflux is common, reflux can sometimes be demonstrated in chronic tuberculous and non-tuberculous infections of the urinary tract. In many of the cases of suspected ascending infection the bladder in-

fection has been present for a considerable period of time. Hence, we are no longer dealing with a normal bladder and absence of reflux in cystograms of normal bladders does not hold as an argument against the ascending theory in infected bladders.

Franke and Stahr have shown that the lymphatics of the descending colon pass over the capsule of the right kidney and that the deep lymphatics of the kidney communicate with those of the capsule. This arrangement of the lymphatics together with the great frequency of colon bacillus infection suggests the theory of direct invasion of the kidney through this lymphatic route. This theory is difficult of proof. My personal experience bearing on the theory is limited to a few unsuccessful attempts to rid the patient of a persistent colon bacilluria by changing the intestinal flora by feeding cultures of *B. acidophilus*.

Regardless of how infection gets into the kidney pelvis let us consider what takes place when it gets there. Inasmuch as we do not remove kidneys for acute pyelitis, our chances to study the acute changes pathologically are limited and our knowledge of the acute process must be gained largely by deduction on the basis of our findings in the chronic specimens which we study. The persistent high temperature, chills, kidney pain, toxic condition of patients with acute pyelitis suggests stasis and resulting absorption. Inasmuch as we do not advocate the passage of ureteral catheters during the acute stage of the disease, I cannot from personal experience, state the incidence of ureteral obstruction cystoscopically in this stage of the disease. We refrain from this instrumental procedure because experience shows that it is seldom necessary to put patients through this unpleasant procedure while acutely ill. However, Caulk, who regularly catheterizes the ureters of patients during the acute stage, reports stasis in 80%. This may be explained on the basis of a pre-existing localized stricture in the ureter, but certainly in many cases the obstruction results from a continuation of the inflammatory process of the kidney pelvis into the ureter. This acute ureteritis results in edema and swelling of the mucosa, causing temporary impairment of drainage at the

anatomically narrow points. This acute inflammation usually subsides within several days, the kidney pelvis begins to drain more freely and the patient recovers from the acute symptoms. The pyuria may clear up promptly and the patient have no further attacks. These cases which do clear up permanently suggest that drainage of the kidney pelvis is satisfactory following the subsiding of the acute ureteritis. On the other hand, the pyuria at times fails to clear up, and in these cases one can often demonstrate ureteral narrowing by means of the ureteral catheter and wax bulb, together with pyelography. It is in cases such as these that dilatation of the stricture offers the best chance of clearing up the infection and frequently relieving the patient of a chronic discomfort in the kidney region. If the infection cannot be cleared up, and it must be admitted that this is sometimes the case, the patient can often be kept free from recurring acute attacks and comfortable by ureteral dilatation. I shall endeavor in the remainder of the paper, by case histories and the demonstration of pyelograms, to emphasize some of the points about which I have been speaking.

Case 1, B. T., aged 12, was first seen by me in November, 1930. At that time she gave a history of recurring attacks of pain in the right groin and back, nausea, vomiting, and temperature up to 100°. These attacks occurred at intervals of one to three weeks. The child had been unable to attend school. Pyelogram showed considerable dilatation of the right kidney pelvis and ureter, which was constricted just before entering the bladder. Cultures from bladder and right kidney showed *B. coli*. The ureter was dilated with catheter and wax bulb. During the following year patient had no further attacks of pyelitis, and cultures taken at intervals between January 1931, and June 1931, showed no growth. She has remained free from symptoms since.

Case 2, K. M., aged 7 years, was first seen by me in December, 1932. Under the care of a competent pediatrician she had had two severe attacks of acute, left-sided pyelitis in the previous two years. The mother of the child gave a history of two attacks of a similar nature at 2 years of age. Because the pyuria had persisted six weeks following the

last attack of acute pyelitis I was asked to investigate the urinary tract. Following the acute attack the child had been clinically well. I found an obstruction in the left ureter a few centimeters above the bladder, and a moderately dilated water. Kidney pelvis appeared normal in the pyelogram. Culture from the left kidney showed *B. coli*. After two ureteral dilatations the culture from the left kidney became negative and has remained so since. Four dilatations were necessary to bring the ureteral lumen up to normal calibre. The child has been in excellent health since.

Case 3, P. M., aged 9½ years, was first seen by me in June, 1932. Her history dated from her third year, when frequency of urination was noted. She ran an elevation in temperature off and on for a year, and pus was noted in her urine constantly. At 4 years of age a tonsillectomy was done; the pyuria cleared up and the general health of the patient improved. At 6 years the patient had the grippe. Following this the temperature persisted and pyuria was again noted, which finally cleared up. At 9 years she again had the grippe and there was a recurrence of the pyuria. Six weeks before I saw the patient she had a streptococcal infection of the throat, followed again by pyuria and a persistent low grade temperature. During this time there was one acute attack with pain in the left side of the abdomen. There was never any right-sided pain. The patient was cystoscoped, and bilateral stricture with hydroureter found on pyelographic study. The calyces were blunted in the left kidney pelvis. Culture from the right kidney showed a *B. coli*, and from the left kidney no growth. The differential phthalein showed an output of 30% from the right kidney and 15% from the left kidney, in one-half hour. The strictures were dilated by several treatments over a period of several weeks. The infection in the right kidney cleared up promptly and the patient has had no further attacks of pyelitis or persistent temperature. She has gained in weight, has missed no school since the first series of treatments and is an apparently healthy child for the first time in several years.

Case 4, M. L., aged 8, was first seen in October, 1932. Following an attack of quinsy she continued to have a temperature inter-

mittently for a few days at intervals of from four to six weeks for three years, with pain referable to the right kidney region. Tonsillectomy was done two years before. Cystoscopic investigation showed bilateral stricture with hydroureter. Urine from the right kidney showed *B. coli*, but was sterile from the left kidney. Both ureters were dilated. The patient has just returned for a check up, after six months. The urine from the right kidney is still infected, but the child has been free from symptoms, has gained weight, and has missed no school since treatment.

The above four cases demonstrate several points upon which I wish to lay emphasis.

1. Case 2 demonstrates the advisability of a thorough urological investigation in all cases of *persistent* pyuria, even when the patient is clinically well. By persistent pyuria I would arbitrarily say a persistence for six or more weeks after the acute attack of pyelitis. It is my belief that a history similar to case 2 of recurring pyelitis calls for a cystoscopic investigation even though the urine clears up entirely between attacks.

2. Cases 3 and 4 demonstrate the frequent bilateral nature of stricture of the ureter even when the symptoms are unilateral. At times the "silent" side may present the more serious lesion. I have discovered totally non-functioning kidneys due to stricture and back pressure which have never given the patient a minute of pain.

3. Cases 3 and 4 show the clinical association between infections in the respiratory tract and pyelitis. In case 3 the pyuria cleared up temporarily following tonsillectomy, but there were two exacerbations following the grippe. Final permanent clearing up did not result until good drainage was established. In case 4 the trouble all began as a sequela of quinsy.

4. Cases 3 and 4 demonstrate the possible association of stricture of the ureter with sterile urine. In fact, in case 4 the densest stricture occurred on the left, from which kidney sterile urine was obtained.

Having shown you the above four cases, which fortunately came to treatment before much kidney damage was done, I now wish to show you a small series of cases in which treatment was not undertaken early enough.

Case 5, D. D., aged 8 years, was first seen in August, 1928. The mother reported that she had always been a sickly child. She had had many attacks of middle ear disease since early infancy. The mother dated the child's kidney trouble to three years before, when, following measles, she began to have pain in the left flank and temperature for a few days about every month. Pus had been found in the urine repeatedly. Cystoscopic investigation demonstrated a non-functioning pyonephrotic kidney on the left, with a dense stricture in the upper part of the ureter near the kidney pelvis. The right kidney was normal. After a few unsuccessful attempts to enter the right kidney pelvis and a persistence of the symptoms a left nephrectomy was done. The specimen removed was a pyonephrotic kidney with a dense stricture at the uretero-pelvic junction. The patient has been in good health since.

Case 6, M. P., aged 29, was first seen by me in May, 1929, complaining of burning and frequency of urination, and pain in her left side since an acute illness which she was told occurred at the age of 3. Because of this pain she had become addicted to morphia. There was marked pyuria but she refused cystoscopic examination. Finally, in 1931, she was cystoscoped. The left ureter could not be catheterized more than a few centimeters, when an impenetrable obstruction was encountered. Differential phthalein showed that there was no function in the left kidney, but the right was secreting 45% in thirty minutes. A flat plate showed a linear shadow in the general course of the lower end of the ureter beginning at the tip of the obstructed catheter. Obviously there had been calcification in the wall of the infected ureter. A nephrectomy was advised, and the left kidney was found to be a very small pyonephrotic sac. Obviously the kidney had lost its function in infancy.

Case 7, M. K., aged 26, first consulted me in September, 1931. She thought herself to be in good health, but in routine urine analysis for insurance pyuria was noted. She had never had any pain in either kidney region. Cystoscopic examination demonstrated a normal kidney on the right, with a 30% phthalein excretion in thirty minutes. On

the left, a catheter could be introduced only two centimeters when a dense obstruction was encountered. Sodium iodide was introduced into the catheter and a hydroureter and very small kidney pelvis with complete obliteration of the calyces were demonstrated in the plate. The left kidney had no function, and was infected with *B. coli*. A left nephrectomy was done removing a very small infantile, pyonephrotic kidney. Patient has been well since.

The above three cases all demonstrate the end result in untreated pyelitis of infancy, with stricture formation of the ureter. Fortunately the kidney function was compensatory on the opposite side in these cases and, although a kidney had to be sacrificed, the patients are well. It is reasonable to assume from our experience that these kidneys could have been saved had ureteral dilatation been instituted early enough. Our autopsy records show similar cases in which the condition was bilateral and unrecognized until the kidneys were too completely destroyed to be saved. The above cases are taken at random from my files but they could be duplicated many times. Although the cases here reported are of childhood, the same general principles of treatment are applicable to pyelitis in adult life. You may have noticed that I have not mentioned the matter of urinary antiseptics. The reason is that I have very scant faith in any of them. Drainage plays a far more important part in treating an infection in the kidney than does any known chemical preparation. None of the above cases 1 to 4 had any urinary antiseptic. Water was forced in each case, and when bladder symptoms were present the urine was alkalized by taking sodium bicarbonate. This usually symptomatically alleviates the burning and frequency of urination to a certain extent, and sometimes completely.

Sounds familiar—yet we found it in J. A. M. A. for March 17th:

IN BUSINESS

Discovered by F. F. S. in the Aztec (New Mex.) Independent

Dr. A. L. Burnett of Durango, said to be ranked as one of the three greatest surgeons in the United States, was a business visitor in Aztec Saturday.

CANCER COMMENT

Irradiation in Treatment of Cancer of the Breast

MARION L. H. FREEMAN*

Wilmington, Del.

The employment of irradiation in the treatment of cancer of the breast is difficult to evaluate because of changing technic of application. There are, however, several careful and interesting comparisons which lead to the conclusion that irradiation has an important place in the modern treatment of breast cancer.

There is not, in the opinion of most authors, sufficient evidence that irradiation can be successfully substituted for surgery in any cases excepting those which are considered primarily inoperable, in which event the palliative effects have been excellent. Irradiation alone is useful in cases which are known to be poor surgical risks due to advanced age, cardiac disease, etc.

In a series of cases reported by Westermarck in *Acta Radiologica*, II, 1, 1930, 162 were given combined surgical and irradiation treatment. For comparison, a study of results obtained by surgery alone was made. The surgical statistics showed a five-year freedom from symptoms in 16.8 to 25.5% of the cases. In the cases irradiated postoperatively there was a corresponding freedom from symptoms in 29.3%, while in those treated preoperatively 40% were symptom-free at the end of five years. 9.8% of cases radiologically treated for recurrences and metastases showed freedom from symptoms after a period of observation lasting more than five years. Local recurrences were much less frequent after combined surgery and irradiation than after surgery alone, and there was a much longer interval before the distant metastases were manifested.

Quick, (J. A. M. A., 101, 2091, 1933), says "Before an extensive program of irradiation or surgery in operable breast cancer is assumed, a meticulously careful radiodiagnostic check-up should be made of the chest and skeleton. The chief value lies in an early and permanent record for subsequent comparisons which symptoms may call for."

*Secretary-technician of the Delaware Tumor Clinics.

Other factors of importance in the appraisal of a case are the histologic character of the growth, its size, and location, its duration, the presence or absence of axillary metastases, the age of the patient, and the presence or absence of anemia.

Quick also says, "Whatever agent, method or combination of x-rays and radium with or without surgery, is decided on, no fixed routine plan is desirable. Adherence to fixed principles of therapy, rather than to fixed technical details is the important factor."

Statistics prove that postoperative irradiation has improved five-year results, and that preoperative irradiation is probably of even greater relative value. Both preoperative and postoperative irradiation should be employed in all cases of breast cancer treated by radical mastectomy.

WOMEN'S AUXILIARY

*To the Members of the Medical Society of
Delaware and the Woman's Auxiliary of
that organization:*

It is my very earnest desire that the medical profession of my own State shall be informed of my responsibilities and activities as President-elect of the Woman's Auxiliary to the American Medical Association. Fully conscious and deeply appreciative of every honor that the Delaware and the National Auxiliary have conferred upon me, I have requested the printing of my Annual Report to the National Auxiliary in the Delaware State Medical Journal.

If anything that I have done meets with your approval, then I shall have been more than repaid for this service to that profession with which I have been closely associated since the day of my birth.

MILDRED HUTTON TOMLINSON.

REPORT OF THE PRESIDENT-ELECT OF THE WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

As your President-elect for the past year, it has been my very great privilege to feel that I have enjoyed the confidence of our beloved President, and I have conscientiously tried to merit that confidence. I have at no time made any move without her approval. During the year, I have attended the Delaware State

meeting in October, and later in that same month spent a day in Cleveland with Mrs. Blake making preparations for this Convention. In December, I attended the Camden County (N. J.) meeting, and in January visited Mrs. VanNess in Newark. On Washington's Birthday I went to the Birthday Luncheon of the Montgomery County (Pa.) Auxiliary. In April I visited the Philadelphia County (Pa.) Auxiliary at the time of their all-day Health Institute. On May second I was a guest of the District of Columbia Auxiliary at their annual meeting and luncheon; and on May 14th attended the New York State Medical Society meeting and spoke before the House of Delegates, and at an informal luncheon attended by wives of physicians. On June 6th I was the guest of the New Jersey Auxiliary at their annual meeting and luncheon in Atlantic City. I have written greetings for the Delaware and the Pennsylvania State Medical Journals, and for the Indiana Auxiliary Year Book. I have answered all letters, written Dr. Olin West offering my co-operation during the year of my Presidency and asked for suggestions, and chosen my National Board.

I have worked with health programs of other organizations, always subject to approval of the Medical Society of Delaware. I have served as a member of the Executive Committee of the Delaware Anti-Tuberculosis Society, and Chairman of the Board of Sunnybrook Cottage, its Preventorium for children. I am working at present with its Executive Secretary on a health program which will use the Auxiliary Study Envelopes for material. I broadcast for the President's Birthday Party in Wilmington, the receipts of which went to Sunnybrook. Also, for the Christmas Seal Campaign, and the Home Safety Committee of the Delaware Safety Council, and secured the speaker, Dr. Louis Clerf of Philadelphia, for the Home Safety luncheon, and procured broadcasting material for the Home Safety Week from the American Medical Association. I am serving as Chairman of the Public Health Committee of the City Federation of Women's Clubs and Allied Organizations. I attended mental hygiene and eugenics meetings with much interest. I represented the

Delaware Auxiliary on the Woman's Joint Legislation Committee, and worked for much-needed tuberculosis legislation, and assisted with the Red Cross campaign. Much of this is local, but these combined local efforts make one great whole movement toward fewer unnecessary deaths from accident, disease, and ignorance, and toward the spread of authentic health information.

Finally, may I speak of the tremendous value the office of President-elect has for its incumbent. The year of preparation for the office of President is one full of opportunity, and is a wonderful period of training for that office. I owe a great debt of appreciation for the kindness and interest shown on my behalf by Mrs. Blake and the members of her National Board. We have been truly blessed by those who have guided our destiny thus far, and it has been a rare privilege to work with them and you.

Respectfully submitted,

MRS. ROBERT W. TOMLINSON.

American Library Service

Every person at one time or another is confronted with the problem of wanting a particular book that is no longer available through the regular publishing or bookstore channels. When a volume has reached that stage of scarcity, it is designated as "out-of-print," and commences to lead an elusive existence.

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EDITORIAL

DELAWARE STATE MEDICAL JOURNAL

Owned and published by the Medical Society of Delaware. Issued about the twentieth of each month under the supervision of the Publication Committee.

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VOL. VI JUNE, 1934 No. 6

RE-PRINTS, ETC.

The frequent inquiries by authors concerning the reprints of articles published in THE JOURNAL prompts us to state briefly the policy of this publication.

First—THE JOURNAL gives no reprints to any author; they are purchased directly from the printer. Galley proofs will be sent to all authors, and when this is returned arrangements for reprints should be made with the printers. The cost is nominal.

Second—THE JOURNAL pays one-half of the cost of illustrations, up to a reasonable number, or to a reasonable sum. A recent national survey shows that \$15-\$20 in cost and 4-5 in number would be considered liberal.

Third—All manuscript and other material

intended for publication in the current issue must reach the editor by the fifth of the month. Copy arriving later than this may have to wait a month, or be "killed."

The *Pennsylvania Medical Journal* for April 1934 carried a page of 40 gummed stickers, to be attached to the doctor's bills—a most unique form of lecture—as follows:

WARNING

In the presence of abdominal pain

**Never give a laxative or physic
Give nothing by mouth
Call your family doctor**

Abdominal pain, cramps, or soreness
which lasts for four hours
is usually serious

This warning is published by The Medical Society of the State of Pennsylvania

EPISTLE TO AN EXECUTOR

Dear Sir:

About the three dollars which I owe Dr. ——. I want to explain why it hasn't been paid; the Dr. gave me three lots of medicine for the nerves. I always thought the doctor was so old he gave me something he hadn't ought to. When I got in bed the bed would go around and every time I would turn over the bed would go around and the same way when I bent over everything would go around. When I explained it to the doctor he said it came from eating buckwheat cakes.

I quit eating them and the thing kept right up but when I quit taking the medicine the thing stopped. I haven't never bin that way sence or never was that way before.

The Doctor sent me a bill once but I didn't pay it.

I don't think I should pay for a medicine that done me more harm than good.

You will see by the doctors books that I always paid all old bills.

EPILOGUE—Record marked, "Paid in full."

DELAWARE ACADEMY OF MEDICINE

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LIBRARY RULES**CONTROL**

1. The facilities of the Library shall be under the control of the Library Committee, and will be available to the members of the Academy and visitors at such hours and under such rules and regulations as the Committee may determine. These are subject to change without notice.

GENERAL

2. The Library shall be open as follows:

Monday 10-5	Tuesday 1-5 7.30-10	Wednesday 10-5
Thursday 10-5	Friday 1-5 7.30-10	Saturday 10-12

3. No one shall be permitted to have access to the Library out of Library hours, unless accompanied by a member of the Library Committee or some other Library official.

4. The use of ink, including fountain pens, is not permitted.

5. Loud talking or other unseemly conduct is not permitted.

6. Members only shall be permitted the use of the study rooms, or to have access to the book-stacks; except, that upon the request of a member, with the endorsement of a member of the Library Committee, the use of a study room may be granted to a visitor for one month from the date of application.

7. Any fine that any member or visitor may incur shall be paid to the librarian immediately upon notice of assessment.

MEMBER BORROWERS**Books**

8. A member shall be allowed to borrow at any one time not more than two volumes of books or bound periodicals, and for each volume borrowed shall file with the librarian a borrower's slip. When any volume is returned to the Library the corresponding slip shall be returned to the borrower.

9. A fine of one dollar or more shall, at the discretion of the Library Committee, be imposed upon any member who takes a book from the Library without signing a borrower's slip.

10. A volume borrowed may be retained for two weeks. If, at the expiration of this time, no request for said volume is on hand, the borrower may renew for a second two weeks, and in like manner, for a third two weeks, after which there shall be no further renewals.

11. If any member retains the book or books borrowed by him longer than two weeks, without renewal, he shall pay a fine of twenty-five cents for every week or part thereof that each volume is so retained. If a borrower loses or damages Library property he shall replace it, or pay the value of it, or of the set to which it belongs.

12. Members engaged in a special research may, on application to the librarian, obtain a permit to take out more than the number of books allowed above; and may be granted more than the two renewals allowed above.

13. Indexes, catalogs of libraries and museums, dictionaries, dispensatories, expensively illustrated or very costly books, or any volume that cannot be replaced if lost shall not be loaned without special permission from the Library Committee.

Journals

14. Journals, unbound and not to exceed four in number, may be taken out for one week; and if, at the expiration of this time no request for said journal is on hand, it may be renewed for a second two weeks. For each journal borrowed a borrower's slip shall be filed with the librarian, which shall be returned to the borrower when the journal is returned to the Library.

15. Unbound books and current numbers of journals and books not formally presented, may be loaned at closing time, to be returned by 10 a. m. the next day. If not returned by that hour (or by the opening hour if that be after 10 a. m.) the librarian shall send for them at the expense of the member borrowing, and a fine of twenty-five cents per book or journal shall be imposed for each day, or fraction thereof, that said books and journals borrowed under this rule are retained over the time allowed. For each book or journal so borrowed a borrower's slip shall be filed with the librarian, as above.

16. If a volume or journal taken out by a member is wanted by another member, no-

tice to this effect will be sent out at once, and it is expected that the volume or journal will then be returned at the earliest convenience of the original borrower. This Rule is a request for promptness and courtesy, and is not to be construed as abridging the privileges of the original borrower.

17. No person, whether a member or visitor, shall loan books or journals borrowed from the Library to any other person.

18. Books and journals shall be sent to members of the Academy living outside of the city at their expense and risk, subject to the approval of the chairman of the Library Committee.

VISITOR BORROWERS

19. A visitor may be introduced by a member, who shall thereby become responsible for any loss that the Library may incur through the visitor's action. The member shall state whether he wishes the visitor to have the privilege of the reading room only, or of borrowing books and journals, under the usual rules, as well; and shall state the length of time that he wishes the privilege to last. If a book or journal, borrowed by a visitor, is wanted by a member, the visitor shall be notified, and shall return the same within three days of receipt of notice. A fine for failure to do so shall be imposed at the rate of twenty-five cents per day per book or journal. Volumes and journals borrowed by a visitor shall not be counted against the amount allowed the member who introduces the visitor.

21. The name and address of every visiting reader or borrower shall be registered in a book kept for that purpose.

20. Visitors who are strangers and unknown to the members, and who wish to consult the books and periodicals in the Library may, at the discretion of the librarian, be permitted the same privileges as is included in a card of introduction, except that the time shall be limited to one week.

INTER-LIBRARY PRIVILEGE

22. Books may be borrowed through this Library from other libraries granting this privilege, or may be loaned to such libraries under the same provisions. The library borrowing for the individual is responsible for the safekeeping and return of the volume

within two weeks, and pays all transportation and insurance charges. The person using this privilege, therefore, must advance a sufficient guarantee to our librarian, meet all expenses incurred, and shall not remove the volume from the Library rooms. Books that cannot be replaced shall not be loaned under this system.

23. These Rules shall be printed and posted in conspicuous places in the reading and study rooms.

MISCELLANEOUS

Newspapers and Leukemia

The great amount of recent publicity given throughout the country to leukemia patients, while it serves admirably as an educational program for the laity, may have some unpleasant repercussions in the profession. Dr. William H. Kraemer, of Wilmington, who is the director of the Tumor Clinic of the Jefferson Hospital, Philadelphia, unwittingly finds himself the victim of some of this premature and embarrassing publicity. For five years the Jefferson Clinic has supplied various clinics and clinicians with their experimental preparations, always with the iron-clad rules that (1) there shall be absolutely no publicity; (2) there shall be absolutely no fee charged; and (3) there shall be absolute adherence to the advised technique.

On June 5, the clinic received a request from a physician in Memphis, Tenn., for a preparation to use in a case of myelogenous leukemia. After a conference the staff decided to honor the request, and the material was sent at once by air mail, Dr. Kraemer sending detailed instructions by telegraphed night letter. The medicine arriving without instructions, Memphis tried during the evening to locate Dr. Kraemer. Somewhere, somehow, there was a leak in these communication efforts, for when the night letter arrived at the Memphis telegraph office the next morning, there was an array of reporters on hand for "the big story." THE JOURNAL is glad to state Dr. Kraemer's innocence of any attempt to exploit himself, his clinic, or the clinic treatment and to express its regret at the chagrinning situation he finds himself in. His own statement follows:

"Because of publicity given a case of leukemia in Memphis, Tenn., for the past week from dif-

ferent parts of the country we have received requests to supply that treatment which is being used in the case in Memphis. Publicity given to that case and its new form of treatment, which we have been endeavoring to develop over a period of five years, may be very misleading to the medical profession for the following reasons:

"This treatment can only be applied in myelogenous leukemia. It is still in its research stage. Technical experience for its successful administration is necessary, and it should be used only by those who are thoroughly familiar with the intravenous injections of metallic colloids, which constitute the treatment. At present there is no supply available for distribution commercially. The application of this treatment for leukemia therefore is dangerous and could do much harm to the patient unless the physician is thoroughly experienced in its application. In the instance of the case of leukemia in Memphis, its treatment was made possible because of the personal experience and knowledge of this disease that the physician treating this case has had with leukemia and this new form of treatment.

"As to the treatment itself, we do not deem it advisable at this time to make any detailed statement. We simply reiterate: it is still in its experimental stage; it is not available commercially; it is merely being furnished to certain institutions for clinical research."

On June 13th Delaware's Auxiliary past-president, Mrs. Robert W. Tomlinson, was installed as the national president of the Woman's Auxiliary of the A. M. A. This is a great honor, and a great responsibility, but also a great opportunity; we have no doubts as to the outcome. Anyway, who's afraid of the old 13?

BOOK REVIEWS

New and Non-Official Remedies, 1934, containing descriptions of the articles which stood accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1934. Cloth. Pp. 510. Price, \$1.50. Chicago: American Medical Association, 1934.

New and Non-official Remedies, 1934, has the same pleasing format and helpful mechanism that has characterized it in past years. The enrichment of the indexing, started a few years ago, is continued and its value even increased by some desirable simplification of cross references.

The Council has made the usual careful revision of the book. The general article *Lactic Acid-Producing Organisms and Preparations* has been practically rewritten. The chapter on *Arsenic preparations* has undergone some revision, especially in the statement concerning *Neoarsphenamine*. The descriptions of *Chiniofon* and *Vioform* have been revised in the light of recent developments in the treat-

ment of amebiasis. The article on *Ethylhydrocupreine* has been revised to delete references to *Optochin Base*, which has been omitted; *Optochin Hydrochloride* has been retained, being recommended only for external use. The description of *Typhoid Vaccine* has been revised to give the dosage of the combination of typhoid and paratyphoid organisms and to mention the use of typhoid vaccine in non-specific protein therapy. A number of revisions of the Council's Rules have been made, particularly with reference to the names of products, which is one of the most frequent and troublesome of the problems with which the Council has to deal. Comparison with last year's volume will show that revisions of more or less importance occur in many other chapters.

Among the preparations newly included in this volume are: *Aminophylline*, a double salt or mixture of theophylline and ethylenediamine, with the advantage of greater solubility over other theophylline preparations; the new alum precipitated diphtheria toxoid; *Neo-Iopax*, a new medium for intravenous urography; *Benzedrine*, an ephedrine substitute; serums containing type II pneumococcus antibodies, which the Council has recently recognized as worthy of clinical trial in view of improved preparations and technic; *Autolyzed Liver Concentrate* and *Extralin*, two new liver preparations for use in the treatment of pernicious anemia; *Metycaine*, a new local anesthetic; and *Sodium Morrhuate*, a salt of the fatty acids of cod liver oil, proposed for use as a sclerosing agent.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1933. Cloth. Pp. 188. Price, \$1.00. Chicago: American Medical Association, 1934.

The main bulk of the volume, which is, incidentally, considerably increased over that of recent annual volumes, is taken up with reports on products which the Council has found unacceptable for inclusion in *New and Non-Official Remedies*. Of special note are the reports on *Alpha-Lobelin*, *Clavipurin*, *Diamypsal*, *Euphydigital*, *Guphen*, *Niazo*, *Omnadin*.

A feature of marked current interest in this volume is the preliminary report on *Alpha-Dinitrophenol*, the new drug for acceleration of cellular metabolism. The Council voices a

warning on the dangers attending the use of this drug; this warning has been increasingly justified in reports of fatalities since the appearance of the Council's report in July of last year. Other preliminary reports which make this volume one of the most interesting issued by the Council in recent years are those on Dilaudid, a new narcotic drug related to morphine; Fuadin, a new antimony compound for use in the treatment of bilharziasis and granuloma inguinale; and Hippuran, a new product for intravenous and oral urography. The comprehensive and definite special report on estrogenic substances furnishes a much-needed review of the present status of such products in gynecologic therapy. The Council insists upon the doctrine that basic laboratory investigation of these substances should precede clinical use.

Of interest to hospital authorities, especially in connection with the book *Hospital Practice for Interns* recently issued by the Council in collaboration with the Council on Medical Education and Hospitals, is the special report, the *Hospital Formulary*, by Hatcher and Stainsby of New York. It outlines a plan characterized by the highest regard for the principles of rational drug therapy. Of more general interest is the Council's second report on the intravenous use of barbitol compounds which is the result of a questionnaire sent to representative physicians. In view of the answers to the questionnaire, the Council reaffirmed its previous decision concerning the limitations of intravenous use of barbitol compounds; namely, that these preparations should be administered intravenously only in a limited number of conditions in which administration by other routes is not feasible. The report carefully details these conditions. The lengthy report on the omission of Pyridium is an outstanding example of the meticulous fairness characteristic of the Council's treatment of the manufacturers of commercial preparations. In connection with the omission of Pyridium should be noted the report which declares Azophene (Mallophene) not acceptable. This product has been shown to be identical with Pyridium and the Council considers the claims for its usefulness as a local, general, or urinary antiseptic as unwarranted, as are those for Pyridium.

A Better Method of Treating Fractures of the Jaws

FREDERICK B. MOOREHEAD, Chicago (*Journal A. M. A.*, May 19, 1934), employs elastic traction in practically all cases in which reduction is required. The mechanism employed in reduction frequently serves equally well for satisfactory immobilization. Under traction the parts are brought into proper relation and held with slight movement, which materially aids in repair. In the common type of jaw fracture the short fragment is pulled up by the masseter internal pterygoid and temporal muscles, while the long fragment is pulled down by the mylohyoid, digastric geniohyoid and external pterygoid. A flat or round wire is molded with a pair of pliers to fit the arch and is fastened to the neck of the teeth with wire or silk ligatures. Orthodontia rubber bands are attached to the wire on each jaw with silk ligatures. After two or three weeks the rubber bands may be removed to see whether occlusion is retained, without help, and if so the appliance may be discarded and a retaining appliance may be used if necessary. Total fractures of the upper jaw with downward and backward, downward and forward, or downward and lateral displacement are reduced best by a skull cap and chin support made with starch bandage, hooks and rubber bands. In a few days the upper jaw will be pushed up to a normal position. Forward, backward or lateral displacement is usually corrected as the jaw is pushed up. If, however, these displacements are not corrected, additional correction may be used by placing the patient's artificial dentures in the mouth and applying traction. In unilateral fractures of the upper jaw, with downward displacement an appliance is placed on the opposite side from the fracture and traction on the sound side will push the fractured jaw upward until full occlusion is reached. For holding lateral stumps of the lower jaw, following reaction of the anterior portion, rubber bands hold the jaw in occlusion with the upper jaw without fixing it. This simple appliance holds the stump or stumps in line during the process of healing and simplifies the introduction of a bone graft later.

Cyanide Antidotes

According to P. J. HANZLIK and A. P. RICHARDSON, San Francisco (*Journal A. M. A.*, May 26, 1934), experimentally effective in protective and resuscitative treatments of fatal cyanide poisoning and clinically useful, in order of decreasing efficiency, are a combination of sodium nitrite and sodium thiosulphate, sodium nitrite, methylene blue and sodium thiosulphate. Experimentally effective, but clinically inadvisable, is triose (glycerinic aldehyde). In mammals, including probably man, the antidotal actions in cyanide poisoning of the following are mediated predominantly through methemoglobin formation: nitrite-thiosulphate combination, nitrite, methylene blue and toluidine blue. Triose apparently forms cyanhydrine and is assisted by central stimulant actions. Thiosulphate is a direct oxidant of cyanide with for-

mation of sulphocyanate. Some kind of direct action, in part at least, on mammalian tissues and cells, independently of methemoglobin, is postulated for methylene blue, and such action is predominant in antagonizing cyanide poisoning of simple physical and biologic systems. The most interesting of a number of ineffective agents are ethylene blue, which is chemically close to methylene blue, and dinitrophenol, a powerful metabolic stimulant and oxidant. Their ineffectiveness clearly indicates the specificity of methylene blue, the high combining chemical efficiency of methemoglobin, and the subordinate importance of tissue oxidation, at least as activated by dinitrophenol. Life tests for methemoglobin formation in certain species of animals are useless. There are procedures for and limitations of blood examinations, which are valuable in interpreting and transferring results to human cases of poisoning.

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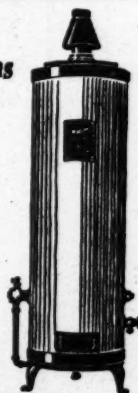
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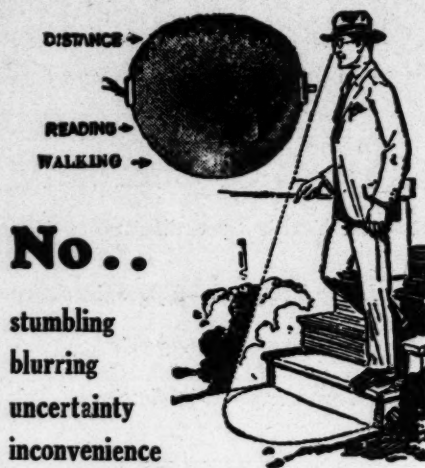
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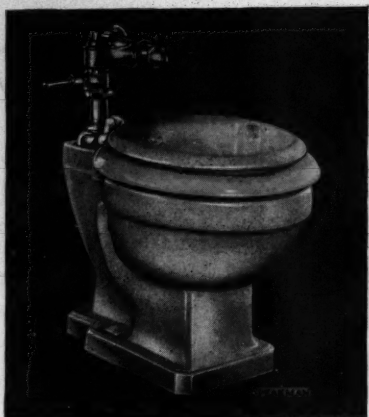
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